CLAIMS

What is claimed and desired to be covered by Letters Patent is:

1. A hand tool for removing hinge pins comprising:

a) a body unit having first and second identical J-shaped body sections, each J-shaped body section including

(1) a main body element having a first end, a second end, a longitudinal axis extending between the first end and the second end, a first side edge, a second side edge, a transverse axis extending between the first side edge and the second side edge, a first face, a second face, and a thickness extending between the first face and the second face,

(2) a hook element located on the first side edge at the first end of each main body unit and having a trunk section which includes

(A) a proximal end unitary with the first side edge of the main body with which the hook element is associated,

(B) a distal end spaced apart from the

proximal end,

(C) a longitudinal axis extending between the proximal end and the distal end and extending in the direction of the transverse axis of the main body associated with the hook element,

(D) a first side edge that is co-planar with the first end of the main body associated with the hook element,

(E) a second side edge spaced apart from the first side edge of the hook element in the direction of the longitudinal axis of the main body associated with the hook element,

(F) a first surface that is co-planar with the first surface of the main body associated with the hook element, and

(G) a second surface that is co-planar with the second surface of the main body associated with the hook element,

(3) the hook element further including a head section that is unitary with the trunk section, the head section including

(A) a proximal end attached to the distal end

of the trunk section on the second side edge of the trunk section,

(B) a distal end spaced apart from the proximal end of the head section in the direction of the longitudinal axis of the main body associated with the hook element,

(C) a first side edge, and

(D) a second side edge which is spaced apart from the first side edge of the head section in the direction of the transverse axis of the main body associated with the hook element and toward the first side edge of the main body associated with the hook element, the second side edge of the hook element being spaced apart from the first side edge of the main body associated with the hook element,

(4) a gap defined between the first side edge of the main body and the second side edge of the head section of the hook element associated with the hook element, the gap extending in the direction of the longitudinal axis of the

main body associated with the hook element and extending from the second side edge of the trunk section of the hook element toward the second end of the main body associated with the hook element,

(5) the gap being sized and adapted to accommodate a body of a hinge element adjacent to one end edge of the hinge element,

(6) a first cross brace element fixing the main body of the first J-shaped body section to the main body of the second J-shaped body section near the second end of each main body and near the second end edge of each main body, and

(7) a second cross brace element fixing the main body of the first J-shaped body section to the main body of the second J-shaped body section near the first end of each main body and near the second end edge of each main body;

b) a hinge pin-engaging unit which includes

(1) a sleeve fixed to the first side edge of the main body of both the first and second J-shaped body sections near the second end of

the main body of each J-shaped body section, the sleeve including a cylindrical body, the cylindrical body having a first end, a second end which is co-planar with the second end of the main body of each of the J-shaped body sections, and a bore extending from the first end of the cylindrical body to the second end of the cylindrical body, and

(2) a drive pin slidably accommodated in the bore of the sleeve, the drive pin including a distal end located adjacent to the sleeve, a proximal end located spaced apart from the sleeve, the drive pin being slidable between a hinge-abutting position and a retracted position, with the proximal end of the drive pin being closer to the sleeve in the hinge pin-abutting position than in the retracted position, the drive pin being located and adapted to directly contact one end of a hinge pin when in the hinge pin-abutting position, the hinge pin having a longitudinal axis and movement of the drive pin from the retracted position to the hinge pin-abutting position being linear and in alignment with

the longitudinal axis of the hinge pin and in a direction which is applied in a manner that pushes the hinge pin; and

c) a hinge pin drive lever unit which includes

(1) a lever arm having a proximal end, a distal end, a first side edge, a second side edge, a longitudinal axis extending between the distal end of the lever arm and the proximal end of the lever arm and in the direction of the transverse axis of each of the main bodies, the lever arm further including a groove defined therein near the distal end of the lever arm, the groove extending from the first side edge of the lever arm to the second side edge of the lever arm, the lever arm further including a first side surface and a second side surface and a thickness extending between the first side surface of the lever arm and the second side surface of the lever arm, the lever arm further including a blind-ended bore defined therein adjacent to the proximal end of the lever arm, the lever arm further including a screw thread defined thereon adjacent to the blind-

ended bore,

(2) a pivot pin pivotally attaching the proximal end of the drive pin to the lever arm, the pivot pin extending across the groove defined in the lever arm and the drive pin being accommodated in the groove defined in the lever arm,

(3) a fulcrum unit which includes

(A) first and second arm elements, the arm elements being identical to each other, each arm element including a first end, a second end, a first surface, and a second surface, the first surface of each arm element slidably abutting the second surface of a main body associated therewith,

(B) a first pivot pin pivotally attaching each arm element to a main body associated therewith, the first pivot pin attaching each arm element to the associated main body being located adjacent to the first end of each arm element,

(C) a second pivot pin which extends through

the lever arm in the direction of the thickness of the lever arm,

(D) the second end of each arm element being pivotally attached to the second pivot pin,

(4) a handle having a proximal end, a distal end, a screw thread defined on the handle adjacent to the proximal end, the screw thread on the handle threadably engaging the screw thread on the lever arm to attach the handle to the lever arm, and

(5) the fulcrum unit being located between the distal end and the proximal end of the lever arm and the lever unit being a first class lever.

2. A hand tool adapted to remove hinge pins comprising:

a) a main body unit;

b) a hinge-engaging hook unit on said main body unit; and

c) a hinge pin-engaging unit on said main body unit, said hinge pin-engaging unit including

(1) a sleeve fixed on said main body unit and having a bore defined therethrough,

(2) a drive pin slidably received in the bore defined through the sleeve, the drive pin being slidable between a retracted position and a hinge pin-engaging position, the drive pin being adapted to engage one end of a hinge pin which has a longitudinal axis and apply hinge pin-removing force to the hinge pin in a direction which is aligned with the longitudinal axis of the hinge pin and which is applied in a manner that pushes the hinge pin, and

(3) a lever unit attached to said main body unit and to the drive pin, the lever unit including

(A) a lever arm having a distal end and a proximal end, with the distal end pivotally fixed to the drive pin,

(B) a fulcrum pivotally attaching the lever arm to said main body unit, the fulcrum being located between the distal end of the lever arm and the proximal end of the lever arm, and

(C) a handle attached to the proximal end of the lever arm.